Tailor-made Nanostructured Materials for Energy Conversion

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My particular research interest is design of well-defined nanostructured inorganic materials and studying their structure-activity relationships for sustainable energy related catalytic applications. The lecture will give a brief insight into my current research activities. The focus of the lecture will be design and development of all-inorganic halide perovskite structures and their implementation as new class of photocatalyst for prototype reactions.[1, 2] The lecture will also briefly present my research activities within CRC-TRR247 consortium that concentrates on advance of nano- and meso-structured transition metal oxides for electrochemical oxygen evolution reaction.[3, 4]

1. Dai, Y. T.; Poidevin, C.; Ochoa-Hernandez, C.; Auer, A. A.; Tüysüz, H., A Supported Bismuth Halide Perovskite Photocatalyst for Selective Aliphatic and Aromatic C-H Bond Activation. *Angew Chem Int Edit* **2020,** *59* (14), 5788-5796.
2. Chen, K.; Deng, X. H.; Dodekatos, G.; Tüysüz, H., Photocatalytic Polymerization of 3,4-Ethylenedioxythiophene over Cesium Lead Iodide Perovskite Quantum Dots. *J Am Chem Soc* **2017,** *139* (35), 12267-12273.
3. Moon, G. H.; Yu, M.; Chan, C. K.; Tüysüz, H., Highly Active Cobalt-Based Electrocatalysts with Facile Incorporation of Dopants for the Oxygen Evolution Reaction. *Angew Chem Int Edit* **2019,** *58* (11), 3491-3495.
4. Yu, M. Q.; Waag, F.; Chan, C. K.; Weidenthaler, C.; Barcikowski, S.; Tüysüz, H., Laser Fragmentation-Induced Defect-Rich Cobalt Oxide Nanoparticles for Electrochemical Oxygen Evolution Reaction. *Chemsuschem* **2020,** *13* (3), 520-528.